

WHAT IS CLAIMED IS:

5

1. A noise canceling method comprising the steps of:

receiving a specific signal having a specified time position, amplitude and phase;

10 recognizing a noise distribution of the specific signal;

15 predicting a noise by extracting a frequency band having a larger noise component from a pair of frequencies generated by insertion of the specific signal; and

reproducing a transmitted original signal by canceling the predicted noise from a reception signal.

20

25 2. The noise canceling method as claimed in claim 1, wherein said specific signal is a zero point signal having an amplitude of zero, and the zero point signal is periodically inserted into the transmitted original signal.

30

35 3. A noise canceling method comprising the steps of:

receiving a reception signal containing a specific signal and a no-transmission energy section during which no periodical transmission is made, the specific signal having a specified time position,

amplitude and phase;

5 extracting a noise component from the specific signal of the reception signal, interpolation-predicting a noise of a data signal point, and canceling a noise of a specific band by removing the predicted noise from the reception signal; and

10 recognizing a noise distribution of the no-transmission energy section of the reception signal, predicting a noise by extracting a frequency band having a larger noise component from a pair of frequencies generated by insertion of the specific signal, and canceling a large level noise by removing the predicted noise from the reception signal.

20 4. The noise canceling method as claimed in claim 3, wherein said specific signal is a zero point signal having an amplitude of zero, and the zero point signal is periodically inserted into the transmitted original signal.

25

30 5. A noise canceling method comprising the steps of:

35 receiving, by a reception side, a reception signal containing a specific signal and a no-transmission energy section during which no periodical transmission is made, the specific signal having a specified time position, amplitude and phase;

investigating a noise distribution of the

reception signal during the no-transmission energy section;

notifying a transmission side of the investigated noise distribution;

5 changing, by the transmission side, an order of channels based on the noise distribution notified by the reception side so that channels having a large noise are gathered in a specific band;

10 sending a signal subjected to the channel change to the reception side;

restoring, by the reception side, the order of channels, which has been changed by the transmission side, to an original order;

15 extracting a noise component of a specific band from the specific signal of the reception signal having channels in the restored order;

interpolation-predicting a noise of a data signal point; and

20 canceling a noise of the specific band by removing the interpolation-predicted noise from the reception signal.

25

6. The noise canceling method as claimed in claim 5, wherein said specific signal is a zero point signal having an amplitude of zero, and the 30 zero point signal is periodically inserted into the transmitted original signal.

35

7. A noise canceling apparatus comprising:

means for receiving a specific signal having a specified time position, amplitude and phase;

5 means for recognizing a noise distribution of the specific signal;

means for predicting a noise by extracting a frequency band having a larger noise component from a pair of frequencies generated by insertion of the specific signal; and

10 means for reproducing a transmitted original signal by canceling the predicted noise from a reception signal.

15

8. The noise canceling apparatus as claimed in claim 7, wherein said specific signal is a zero point signal having an amplitude of zero, and 20 the zero point signal is periodically inserted into the transmitted original signal.

25

9. A noise canceling apparatus comprising:

mans for receiving a reception signal containing a specific signal and a no-transmission 30 energy section during which no periodical transmission is made, the specific signal having a specified time position, amplitude and phase;

means for extracting a noise component from the specific signal of the reception signal, 35 interpolation-predicting a noise of a data signal point, and canceling a noise of a specific band by removing the predicted noise from the reception

signal; and

means for recognizing a noise distribution of the no-transmission energy section of the reception signal, predicting a noise by extracting a 5 frequency band having a larger noise component from a pair of frequencies generated by insertion of the specific signal, and canceling a large level noise by removing the predicted noise from the reception signal.

10

10. The noise canceling apparatus as 15 claimed in claim 9, wherein said specific signal is a zero point signal having an amplitude of zero, and the zero point signal is periodically inserted into the transmitted original signal.

20

11. The noise canceling apparatus as 25 claimed in claim 9, wherein said means for recognizing a noise distribution comprises means for transforming the reception signal during the no-transmission energy section by a fast Fourier transformation method.

30

12. A noise canceling apparatus comprising:

35 means, provided on a reception side, for receiving a reception signal containing a specific signal and a no-transmission energy section during

which no periodical transmission is made, the specific signal having a specified time position, amplitude and phase;

means, provided on the reception side, for 5 investigating a noise distribution of the reception signal during the no-transmission energy section;

means, provided on the reception side, for notifying a transmission side of the investigated noise distribution;

10 means, provided on a transmission side, for changing, by the transmission side, an order of channels based on the noise distribution notified by the reception side so that channels having a large noise are gathered in a specific band;

15 means, provided on the transmission side, for sending a signal subjected to the channel change to the reception side;

means, provided on the reception side, for restoring the order of channels, which has been 20 changed by the transmission side, to an original order;

means, provided on the reception side, for extracting a noise component of a specific band from the specific signal of the reception signal having 25 channels in the restored order;

means, provided on the reception side, for interpolation-predicting a noise of a data signal point; and

means, provided on the reception side, for 30 canceling a noise of the specific band by removing the interpolation-predicted noise from the reception signal.

13. The noise canceling apparatus as
claimed in claim 12, wherein said specific signal is
a zero point signal having an amplitude of zero, and
the zero point signal is periodically inserted into
5 the transmitted original signal.

10 14. The noise canceling apparatus as
claimed in claim 12, wherein said means for
investigating a noise distribution comprises a low-
pass filter and means for demodulating the reception
signal during the no-transmission energy section on
15 an individual frequency band basis.

20

25

30

35